

What is claimed is:

1. A high speed backplane interconnection system comprising:  
a plurality of conductor matched impedance transmission line elements; and  
5 an air dielectric surrounding the plurality of transmission line elements.
2. The interconnection system of claim 1, further comprising:  
a ground plate disposed a predetermined distance from the transmission line  
10 elements wherein the predetermined distance is reflective of a characteristic impedance of the system.
3. The interconnection system of claim 1, further comprising:  
a base plate; and  
a plurality of spacers positioned on said base plate for securing the transmission  
15 line elements a predetermined distance from said base plate.
4. The interconnection system of claim 3, wherein the spacers are formed from a non-  
conductive material.
5. The interconnection system of claim 1, further comprising:  
20 a housing surrounding the transmission line elements.
6. The interconnection system of claim 5, wherein the housing comprises:  
a cover; and  
25 a base adapted to securely receive the cover.
7. The interconnection system of claim 6, wherein the cover and the base are formed from a  
non-conductive material.
- 30 8. The interconnection system of claim 1, further comprising:  
a plurality of signal tabs, each signal tab connected to an end of each transmission  
line and also adapted to be connected to an electrical system such that when the signal

tab is connected to the electrical system an electrical connection is established between the transmission line and the electrical system.

9. The interconnection system of claim 2, further comprising:

5                   at least one ground tab connected to the ground plate for connecting the ground plate to a ground.

10. The interconnection system of claim 1, wherein the transmission line elements have a round cross-section.

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11. An electrical system comprising:

a backplane; and

a high speed interconnection system disposed on said backplane, the interconnection system comprising:

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a plurality of conductor matched impedance transmission line elements;

and

an air dielectric surrounding the plurality of transmission line elements.

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